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Notes on Carex — IV

KENNETH KENT MACKENZIE

CAREX PHAEOCEPHALA Piper

Carex leporina var. *Americana* Olney, Proc. Am. Acad. Arts & Sci. **8**: 407. 1872 (name only). — Bailey, Proc. Am. Acad. Arts & Sci. **22**: 152. 1886.

"*Carex leporina* L." Bailey, in Coulter, Man. 396. 1885.

"*Carex Preslii* Steud." Bailey, Mem. Torrey Club **1**: 52. 1889.

"*Carex petasata* Dewey;" Holm, Am. Journ. Sci. IV. **16**: 20. 1903.

Carex phaeocephala Piper, Contr. U. S. Nat. Herb. **11**: 172. 1906.

Clumps from medium-sized to large, strongly cespitose, the rootstocks densely matted, the culms 1–3 dm. high, exceeding the leaves, obtusely angled below, sharply angled and more or less roughened above. Leaves three to six to a culm, clustered towards the base, the sheaths much overlapping, whitish-hyaline towards apex opposite the blades, the blades short, more or less involute, ascending to recurving, 1.5–2 mm. wide, usually 5–15 cm. long, roughened towards the apex; spikes two to five (rarely seven) aggregated into an erect head 12–25 mm. long, 5–12 mm. wide, the lower one or two spikes occasionally a little separate, the spikes ovate to oblong, 6–12 mm. long, 5–8 mm. wide, obtuse at apex, narrowed and often quite clavate at base (especially the uppermost), the perigynia usually 10–20, appressed-ascending, the beaks inconspicuous, the staminate flowers basal, inconspicuous; lower bracts occasionally developing a short cusp, the upper scale-like; scales ovate, acute, dark-brownish or brownish with lighter midrib and broad hyaline margins, as wide and as long as the perigynia; perigynia oblong-ovate, flat, plano-convex, distended over the achene, 4.5 mm. long, 1.8 mm. wide, winged, round-tapering at base, strongly nerved on outer surface, nearly nerveless or lightly nerved on the inner, the body abruptly contracted into the beak, which is 1 mm. long, rather minutely bidentate and serrulate on the margins; achenes lenticular, brownish, obovate-oblong, 1.5 mm. long, 1 mm. wide; stigmas two.

This species, which is closely related to *Carex leporina* L., and represents it in the Rocky Mountain region, has been known under different names for many years, but has never been fully described. Collections made during the last ten years have much extended our knowledge of the plant, and have shown that it has a wide range, and is one of the characteristic species of the alpine summits of the Rockies. The chief distinctions between it and *C. leporina* may be contrasted as follows:

Culms 1–3 dm. high, the leaves bunched near base; blades 1.5–2 mm. wide, more or less involute. *C. phaeocephala.*
Culms 1.5–4 dm. high, the leaves not bunched; blades 2–3 mm. wide, flat. *C. leporina.*

Two names have been ascribed to this species at different times, but neither of them can properly be used.

1. *Carex Preslii* Steud. Plant. Cyp. 242. 1855. The author of this species based his description on Presl's *C. leporina* L. (Reliq. Haenk. 204. 1830). His description can be applied to several North American species of *Carex* found in the Nootka Sound region, where the plant was obtained, and to apply it to the present plant is pure guess-work. It is to be noted, too, that he does not place the species next to *Carex leporina*, which was, of course, well known to him, but in a section "species quoad sectiones et affinitatem minus notae, partim omnino dubiae." The original specimen seems to have disappeared (Bailey, Mem. Torrey Club **1**: 52), and, in any event until it is located, the name should be disregarded.

2. *Carex petasata* Dewey, Am. Jour. Sci. I. **29**: 246. 1836. As this is one of the earliest published species of *Carex* from the Rocky Mountain region its identification is important. Of it Professor Bailey says: "The original sheet is in Herb. Torr. It contains three plants: *C. lagopina* Wahl., *C. festiva* Dewey, and *C. Liddoni* Boott, to all of which Dewey's description will equally apply" (Mem. Torrey Club **1**: 52). Concerning this I should say that the description calls for a plant with a "compressed," "slightly winged" perigynium, characters hardly applicable to *C. lagopina*, and as Dewey described *C. festiva* in the same paper we can hardly refer *C. petasata* to it. The facts concerning this sheet seem to be that Drummond, the original collector, mixed *C. petasata* and *C. lagopina* (Torrey, N. Am. Cyp. 393) and that the specimen of *C. festiva* on the sheet, which was col-

lected by Nuttall, is a later addition. But finally, and most important of all, Dewey's description is accompanied by a plate (*W. f. 72*). This plate clearly shows that it was the third plant on the sheet in the Torrey herbarium which Dewey had in mind. This plant, which I have examined, is *Carex Liddoni* Boott, as stated by Professor Bailey. As this last-named species was not published until 1840 (Hook. Fl. Bor.-Am. **2**: 214) it should be superseded by *Carex petasata* Dewey. The identification of *C. petasata* with *C. phaeocephala* rests on work done when our western *Carices* were but little known, and is entirely baseless, so far as I know.

Of *Carex phaeocephala* I have seen the following specimens:

WYOMING: Big Horn Mts., 7000–9000 ft., *Tweedy 3344*, July–August, 1900; Sheep Mt., 11,000 ft., *Tweedy 410*, August, 1897; Teton Mts. (timber line and above), *A. & E. Nelson 6539*, August 16, 1899; Big Horn Mts., Sheridan County, 10,000 ft., *Tweedy 2240*, August, 1899; Anita Peak, Routt County (alpine grassy summits), *Goodding, 1754*, August 3, 1903; Ethel Peak, Larimer County, *Goodding 1900*, August 14, 1903.

COLORADO: Bottomless Pit, 3800 m., *F. E. & E. S. Clements 501*, July 23, 1901; Windy Point, Pike's Peak, *Clements 3*, 1900; "Rocky Mts.," *Vasey 600*.

UTAH: Belknap Peak, *Rydberg & Carlton 7361*, July 28, 1905; Bear River Canyon, 11,000 ft., *Watson 1234*, August, 1869.

MONTANA: Long Baldy, Little Belt Mts., 7000 ft., *Rydberg 3399* and *3400*, and *Flodman 312*, August 19, 1896; Old Hollowtop (near Pony), 9000 ft., *Rydberg & Bessey 3783*, July 7, 1897; Columbia Falls, *Williams*, September 8, 1892; Spanish Peaks, Madison Range, 7000–8000 ft., *Flodman 323*, July 14, 1896; Spanish Basin, *Rydberg 3066*, July, 1896; Mt. Henry, Midvale, *Umbach 408*, July 16, 1903; near Glacier Basin, 2200 m., *Vreeland 1085*, August 5, 1901 (blades but 1 mm. wide).

IDAHO: Mt. Chauvet, 10,000 ft., *Rydberg & Bessey 3782*, July 29, 1897.

WASHINGTON: Mt. Adams, *Howell, 3900*, August, 1882.

OREGON: Mt. Hood, *Lloyd*, July 21, 1894, and *Henderson* (alpine moraines), July 20, 1884; head of Wallowa River, 9000 ft., *Cusick 2479*, July 17, 1900.

CALIFORNIA: Mt. Shasta, 10,400 ft., *Copeland 3568*, July 16, 1903.

CANADA: Selkirks, 7,500 ft., *Shaw 1020*, July 26, 1905; Selkirks, 8000 ft., Heights above Carbonate Draw, *Petersen*, July 14, 1904; Lake O'Hara, Rocky Mt. Park, 7500 ft., *John Macoun 64016*, August 9, 1904; Lake Louise, Rocky Mts., 7300 ft., *John Macoun 64017*, July 20, 1904; Old Glory Mt., 6500 ft., between Kettle and Columbia Rivers, *J. M. Macoun 63324*, August 13, 1902.

Carex projecta sp. nov.

" *Carex cristata* Schwein." Kunze, Car. *pl. 44. f. g.* 1840–1850. — Boott, Ill. Car. 117, in part, *pl. 373.*

Carex lagopodioides var. *moniliformis* Olney, Exsicc. fasc. 2, no. 8 (n.n.); Bailey, Bot. Gaz. **10**: 380. 1885.

" *Carex tribuloides moniliformis* (Tuckerm.) Britton;" Britt. & Brown, Ill. Fl. **1**: 356. 1896. Not *Carex scoparia* var. *moniliformis* Tuckerm.

Carex tribuloides var. *reducta* Bailey, Proc. Am. Acad. Arts & Sci. **22**: 148. 1886. Not *Carex reducta* Drejer.

Clumps small to medium-sized, not stoloniferous, the culms 5–9 dm. high, exceeding the leaves, strongly roughened on the angles beneath the head. Leaves with well-developed blades usually four to six to a fertile culm, on the lower half but not clustered, the sheaths long and loose, the ligule not prolonged, the blades flat, 3–7 mm. wide, usually 2–4 dm. long, roughened especially on the margins and towards the apex; sterile culms very leafy; spikes eight to fifteen, alternately and usually loosely arranged in a flexuous moniliform head 3–5 cm. long, less than 1 cm. broad, the spikes orbicular or suborbicular, 5–8 mm. long, 4–7 mm. wide, straw-colored or greenish or even brownish, blunt at the apex, subclavate-tapering at base, the staminate flowers basal, few, but their scales rather conspicuous, the perigynia 15–30, ascending-spreading, with conspicuous often widely divergent beaks; lower bract (when developed) setaceous and much shorter than the head; upper bracts scale-like; scales lanceolate or ovate-lanceolate, obtuse to acutish, straw-colored with hyaline margins, often brownish-tinged, narrower and much shorter than the perigynia; perigynia straw-colored or brownish, lanceolate, flat, more or less strongly distended over the achene, noticeably but narrowly wing-margined to the base, 3.25–5 mm. long, about 1.5 mm. wide, nerved on both surfaces, round-tapering at base, tapering into the serrulate bidentate beak, which is one third to one half the whole length; achenes lenticular, short-stipitate, 1.5 mm. long, 0.5 mm. wide, oblong; stigmas two.

This plant is so widely distributed and well marked that it seems to me to be fully entitled to specific recognition. The flexuous head and the small spikes, with the perigynia-beaks conspicuous and widely divergent, present a marked contrast to the stiffer head, the larger spikes, and the appressed perigynia-beaks of *Carex tribuloides* Wahl., its nearest ally. It ranges from Nova Scotia and New Brunswick to Minnesota and south to the District of Columbia and Illinois, but is rare in the southern part of its range. The following specimens have been examined by me:

NOVA SCOTIA: Pictou, *Howe & Lang 459*, July 12, 1901.

NEW BRUNSWICK: Kouchibougnac, *Fowler*.

QUEBEC: Montmorenci Falls, *John Macoun 67783* and *67784*, July 7 and June 28, 1905; Rivière du Loup, *Eggleston 3065*, August, 1902.

MAINE: Ft. Kent, *Knight*, August 20, 1905; Beech Hill Road, Mt. Desert Island, *Faxon*, July 4, 1892; Orono, *Briggs*, September, 1892, and *Fernald*, July 7, 1891; Ft. Fairfield, *Fernald 162*, July 6, 1893.

NEW HAMPSHIRE: "State Line," *Brainerd*, July 16, 1896; White Mountains, *Tuckerman*.

VERMONT: Rutland, *Eggleston 2492*, July 23, 1901.

NEW YORK: Adirondack Mts., *Peck*.

ONTARIO: North Bay, Lake Nipissing, *Fowler*, July 18, 1891; Guelph, *Klugh*, July 25, 1905; Ottawa, *John Macoun 26856*, June 26, 1900.

MINNESOTA: Milaca, Mille Lacs Co., *Sheldon*, July, 1892.

ILLINOIS: Athens, Menard County, *E. Hall*, June, 1870.

DISTRICT OF COLUMBIA: *Steele*, June 3, 1900.

Carex chihuahuensis sp. nov.

Clumps medium-sized, the rootstocks long-creeping, culms 2–3 dm. high, filamentose at base, strict, slightly roughened on the angles, exceeding the leaves. Leaves with well-developed blades four to eight to a fertile culm, clustered on the lower fourth, the sheaths overlapping, the ligules not prolonged, the blades flat, ascending, 2–3 mm. wide, 5–15 cm. long, very rough towards the apex; inflorescence consisting of numerous scarcely distinguishable spikes densely aggregated (or the lower clusters separate) into a compound or somewhat decompound ovate or oblong head, 2–7 cm. long, 7–15 mm. wide, the individual spikes with 4–10 ascending or more or less spreading perigynia below and the inconspicuous staminate flowers above; bracts scale-like, the lower prolonged, shorter than the head; scales ovate-oblong, obtuse (or lower acute), light-brownish with straw-colored midrib and hyaline margins, about the width of the perigynia but shorter; perigynia ovate, plano-convex, thick and corky at base, 3.5 mm. long, 1.5 mm. wide, the edges sharp-angled but not winged, nerved on outer, nerveless on inner surface, at maturity round-truncate at base (the young perigynia rounded), tapering at apex into the serrulate bidentate beak, this ¼–⅓ the length of the whole (or longer in the young perigynia); achene lenticular, occupying upper half of perigynium body, sessile, oval, 1.5 mm. long, 1 mm. wide; stigmas two.

This is one of the numerous forms at various times referred to *Carex marcida* Boott. The most satisfactory point of distinction between the two species is that the present species has the body of the perigynium corky at base, with the achene in the upper part, while in *C. marcida* the perigynium body is not corky at base and the achene is inserted in the lower part of the body.

Specimens examined:

CHIHUAHUA, MEXICO: Puerta de St. Diego, 6500 ft., *C. V. Hartman 620*, April 12, 1891 (type in herb. N. Y. Bot. Garden); Sierra Madre near Colonia Garcia, 7800 ft., *Townsend & Barber 19*, June 7, 1899.

CAREX SCIRPOIDEA MICHX. AND ITS ALLIES

Among the most widely distributed of the Canadian species of *Carex* is the well-known *Carex scirpoidea* Michx. Found in mountainous country, it ranges from the Gaspé region to the Canadian Rockies and northward to Alaska, and in the United States it occurs in many places in the extreme north — for example, in Maine, New Hampshire, Vermont, and Montana. In the eastern part of its range it has no near relatives, but in western Canada and the northwestern part of the United States, it is either wholly or largely supplanted by certain allied species, several of which have a much more southern range than *Carex scirpoidea* itself.

Of the five allied species which I have been able to recognize, one — *Carex pseudoscirpoidea* Rydberg — has been carefully described by its author; two others — *Carex stenochlaena* (Holm) and *Carex gigas* (Holm) — have been published as varieties of

Carex scirpoidea; and two others — *Carex scabriuscula* and *Carex scirpiformis* — are here proposed as new.

In addition to valuable characters derived from the shape and color of the perigynium and its pubescence or relative lack of pubescence, the chief points connected with the inflorescence to be noticed are the shape, relative length, and pubescence of the scales. The width of the leaf-blades and the relative stoutness of the culms, although at times relied on, are too variable to be of real service, and while the western allies of *C. scirpoidea* as a whole seem much more inclined to grow in dense mats and to have shorter dense rootstocks than that species I am not able to judge from herbarium material alone whether this character can be relied on.

However, there is another character which Mr. Holm has used in other groups of *Carex* and seems to be constant and of value in the present group. That is, in some of the species the lower culm-leaves are reduced to bladeless sheaths, thus leaving in the present group but few (usually 3–5) well-developed leaves to a culm; and in other species the lower culm-leaves develop blades, thus giving in the present group many (usually 6–10) well-developed leaves to a culm. The former species are referred to as aphyllopodic; the latter as phyllopodic. One of the best marks of distinction of *Carex pseudoscirpoidea* is that it is phyllopodic, and this is also true of the very local *Carex gigas* and *Carex scabriuscula.* On the other hand the other three species are aphyllopodic.

The following key will serve to distinguish the species and to contrast their more evident points of difference:

- Perigynium sparsely pubescent towards apex only, dark brownish-black.
  - Perigynium-body broadly oval, 3 mm. long, very abruptly beaked. *C. gigas.*
  - Perigynium-body lanceolate, 4 mm. long, tapering into the beak. *C. scabriuscula.*
- Perigynium densely pubescent to hirsute, lighter in color (or dark at apex only).
  - Perigynium lanceolate, flattish, 4 mm. long. *C. stenochlaena.*
  - Perigynium broader, triangular, 3 mm. long or less.
    - Culms aphyllopodic, the culm-leaves usually 3–5; scales shorter than perigynia.
      - Scales very minutely hyaline-margined; perigynium whitish-pubescent. *C. scirpoidea.*

Scales very broadly hyaline-margined; perigynium yellowish-hirsute. *C. scirpiformis.*

Culms phyllopodic, the culm-leaves usually 6–10; scales concealing perigynia. *C. pseudoscirpoidea.*

Descriptions of the new species and the varieties here raised to specific rank follow:

Carex gigas (Holm) sp. nov.

Carex scirpoidea var. *gigas* Holm, Am. Journ. Sci. IV. **17**: 21. 1904.

Culms 3–4.5 dm. high, phyllopodic, from densely matted stout rootstocks, the culms stoutish, roughened on the angles above, much exceeding the leaves, reddened and somewhat filamentose at base. Leaves with well-developed blades 5–10 to a fertile culm, clustered near the base, the sheaths hyaline opposite the blades, brownish-tinged and minutely puberulent, the blades ascending, flat, 2.5 mm. wide, 5–15 cm. long, roughened towards the apex; culms dioecious, the spike erect, normally solitary; staminate spike not seen, the pistillate (terminal) linear, 1.5–2.5 cm. long, 4–6 mm. wide, with an ovate short-pointed scale-like bract at base, and an elongated (2–4 cm. long) bract 1–3 cm. below, its sheath slightly darkened and little (1–3 mm.) sheathing, often with a smaller peduncled spike in its axil; scales oblong-ovate, glabrous, brownish with lighter midrib and narrow hyaline margin, acute or obtuse, as wide as the perigynia and of about the same length; perigynia numerous, black, 3 mm. long, 2 mm. wide, the body broadly oval, flattish, rounded at base, rounded at apex and very abruptly contracted into the minute bidentate beak (0.5 mm. long), minutely puberulent above and pubescent on the angles; achenes triangular, 2 mm. long; stigmas three.

This species, as yet known only from northern California, has a perigynium entirely different from that of any other member of this group, and is clearly entitled to be treated as a species.

Specimens examined:

CALIFORNIA: Siskiyou County, 8,000 ft., *Pringle*, August 18, 1881.

Carex scabriuscula sp. nov.

Culms about 3 dm. high, phyllopodic, from stout short-creeping rootstocks, the culms stoutish, roughened on the angles above, much exceeding the leaves, somewhat reddened at base. Leaves with well-developed blades 5–10 to a fertile culm, clustered near the base, the sheaths hyaline, brownish-tinged and minutely puberulent towards the apex opposite the blades, the blades ascending, flat, 2–3 mm. wide, 6–12 cm. long, roughened towards the apex; culms dioecious, the spike erect, normally solitary; staminate spike not seen, the pistillate (terminal) linear, 1.5–4 cm. long, 4–8 mm. wide, with an ovate short-pointed scale-like bract at base, and an elongated (2–4 cm. long) bract 1–3 cm. below, its sheath somewhat darkened and scarcely sheathing, often with a small peduncled spike in its axil; scales oblong-ovate, glabrous, brownish-black with lighter midrib and narrow hyaline margins, acute or obtuse, as wide as the perigynia but shorter; perigynia numerous, black, 4–4.5 mm. long, 1.5 mm. wide, the body lanceolate, flattish, rounded at base, tapering at apex into the minute entire (or nearly entire) beak (0.5 mm. long), minutely puberulent and pubescent on the angles above; achenes triangular, 2 mm. long; stigmas three.

The perigynium in this plant is so nearly glabrous in age that at a first glance it appears completely so, and this lack of apparent pubescence gives the species a very different aspect from that of *C. scirpoidea.*

Specimens examined:

"Cascade Mountain Plants," wet meadow of the Cascade Mts., *Cusick 2849*, June 30, 1902. (Type in herb. N. Y. Bot. Garden, distributed as *Carex feta* Bailey.)

Carex stenochlaena (Holm) sp. nov.

Carex scirpoidea var. *stenochlaena* Holm, Am. Journ. Sci. IV. **17**: 20. 1904.

Culms 2.5–4 dm. high, aphyllopodic, from densely matted stout rootstocks, the culms stoutish, strongly roughened on the angles above, much exceeding the leaves, reddened and somewhat filamentose at base. Leaves with well-developed blades usually 3–6 to a fertile culm, on the lower third but not clustered, the sheaths long-overlapping, hyaline, brownish tinged and puberulent opposite the blades, the blades ascending, flat, 2–2.5 mm. wide, 5–15 cm. long, roughened towards the apex; culms dioecious, the spike erect, solitary; staminate spike 2 cm. long, 3–5 mm. wide, the scales obtuse, brownish with lighter center and hyaline margins, the pistillate linear, 1.5–3 cm. long, 4–7 mm. wide, with an elongated bract 0.5–5 cm. long, inserted 0.5–3 cm. below, its sheath dark-colored, little sheathing; scales oblong-ovate, puberulent and slightly ciliate at apex, black with midnerve lighter and a very narrow hyaline margin, acute or obtuse, as wide as perigynia but somewhat shorter; perigynia numerous, black (at least towards apex), 4 mm. long, 1.5 mm. wide, the body lanceolate, flattish, rounded at base, tapering at apex into the minute entire beak 0.5 mm. long, appressed-pubescent; achenes triangular, 2 mm. long; stigmas three.

Apparently this species is the most common representative of the group near the Pacific coast. Its oblong-ovate black scales and long (4 mm.) lanceolate perigynia readily distinguish it.

Specimens examined:

BRITISH COLUMBIA: Chilliwack Valley, 4000 ft., *J. M. Macoun 33,728*, July 12, 1901.

ALASKA: On bluffs along Yes Bay, *Howell 1705 A*, July 16, 1895.

WASHINGTON: Horse-Shoe Basin, Okanogan County, 5000 ft., *A. D. E. Elmer 684*, September, 1897.

Carex scirpiformis sp. nov.

Culms 2.5–4.5 dm. high, aphyllopodic, from matted or short-creeping slender or stoutish rootstocks, the culms from slender to stout, strongly roughened on the angles above, much exceeding the leaves, reddened at base. Leaves with well-developed blades usually 3–6 to a fertile culm, on the lower third but not clustered, the sheaths long-overlapping, hyaline, brownish-tinged and puberulent opposite the blades, the blades ascending, flat, 2–3 mm. wide, 5–20 cm. long, roughened towards the apex; culms dioecious, the spike erect, solitary or rarely with a small additional one at base; staminate spike not seen, the pistillate linear, 2–4 cm. long, 4–5 mm. wide, with a rudimentary or elongated bract 3 cm. or less long at or somewhat below the base, its sheath somewhat darkened, little sheathing; scales ovate, strongly pubescent and ciliate at apex, brownish with broad white-hyaline margin and lighter center, obtuse or acute, as wide and nearly as long as perigynia; perigynia numerous, greenish or yellowish-brown, hirsute, 2.5 mm. long, 1.25 mm. wide, the body ovate-oval, obscurely triangular, tapering to a substipitate base, abruptly contracted at apex into the minute entire beak (0.5 mm. long); achenes triangular, 1.75 mm. long; stigmas three.

This plant is more closely related to *C. scirpoidea* than are any of the other plants here discussed. The contrast, however, between the long scales of this species with their broad hyaline margins, and those of *C. scirpoidea* with nearly no margin and usually much shorter than the perigynia, is so marked and constant in the specimens examined that I feel justified in proposing the species.

Specimens examined:

ALBERTA: Banff, damp ground near Middle Spring, 4700 ft. *McCalla 2348*, July 28, 1899. (Type in herb. N. Y. Bot. Garden); near Banff, *Macoun*, June 30, 1891 (in part); Rocky Mt. Park, *John Macoun 64054*, July 11, 1904.